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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2019 Missile Defense Agency **Date:** February 2018

<b>Appropriation/Budget Activity</b> 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	128.023	57.567	36.239	61.017	-	61.017	16.917	49.170	51.003	59.759	Continuing	Continuing
MT07: THAAD Test	123.387	54.743	33.321	57.892	-	57.892	16.184	46.955	48.629	57.387	Continuing	Continuing
MD40: Program Wide Support	4.636	2.824	2.918	3.125	-	3.125	0.733	2.215	2.374	2.372	Continuing	Continuing

**Program MDAP/MAIS Code:** 362

**Note**

The increase from FY2018 to FY2019 reflects conducting a full operational flight test in FY2019, vice two non-intercept tracking exercises in FY 2018.

**A. Mission Description and Budget Item Justification**

Ballistic Missile Defense Terminal Defense Segment Test provides the Terminal High Altitude Area Defense (THAAD) program's participation in Ballistic Missile Defense System (BMDS) Flight Tests and Ground Tests in accordance with the BMDS Integrated Master Test Plan (IMTP). THAAD Test coordinates with Operational Test Agencies, conducts pretest planning, coordination and analysis, conducts flight test operations, performs post-flight test reporting, and performs data distribution and storage.

<b><u>B. Program Change Summary (\$ in Millions)</u></b>	<b><u>FY 2017</u></b>	<b><u>FY 2018</u></b>	<b><u>FY 2019 Base</u></b>	<b><u>FY 2019 OCO</u></b>	<b><u>FY 2019 Total</u></b>
Previous President's Budget	63.444	36.239	68.865	-	68.865
Current President's Budget	57.567	36.239	61.017	-	61.017
Total Adjustments	-5.877	0.000	-7.848	-	-7.848
• Congressional General Reductions	-5.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.877	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• FY 2017 Request for Additional Appropriations	0.000	0.000	0.000	-	0.000
• Missile Defeat and Defense Enhancement	0.000	0.000	0.000	-	0.000
• Other Adjustment	0.000	0.000	-7.848	-	-7.848

**Change Summary Explanation**

FY 2017 Congressional General Reduction for test delays associated with FTT-18 and FET-01 (previously known as FTT-15).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Missile Defense Agency		Date: February 2018
<b>Appropriation/Budget Activity</b> 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)	<b>R-1 Program Element (Number/Name)</b> PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test	
<p>The decrease in FY 2019 from PB 2018 to PB 2019 reflects aligning budget to final Integrated Master Test Plan requirements for PB 2019.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency										Date: February 2018		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test				Project (Number/Name) MT07 / THAAD Test			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MT07: THAAD Test	123.387	54.743	33.321	57.892	-	57.892	16.184	46.955	48.629	57.387	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note The increase from FY2018 to FY2019 reflects conducting a full operational flight test in FY2019, vice two non-intercept tracking exercises in FY 2018.												
A. Mission Description and Budget Item Justification THAAD Test conducts BMDS Flight Tests and Ground Tests with other BMDS elements (such as Army Navy / Transportable Radar Surveillance (AN/TPY-2), BMDS Command, Control, Battle Management, and Communication (C2BMC), PATRIOT, and Aegis) in accordance with the BMDS IMTP. THAAD Test coordinates with Operational Test Agencies, conducts all pre and post flight test, ground test, cyber security enhancements, and war-games and exercises requirements.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2017	FY 2018	FY 2019	
Title: Flight Test Execution <div>Articles:</div> Description: Performs all requirements to support flight test execution such as mission planning, pre-flight integration testing, conduct of readiness reviews, test asset transportation, flight test execution and data collection, post flight test reporting and data distribution. Specific and/or unique accomplishments to each FY are as follows:  FY 2018 Plans: - Conduct description efforts to support the following test events in accordance with the IMTP: - Conduct Flight Test Tracking Event-35 (FTX-35) at White Sands Missile Range, which will prove THAAD software build 3.0 and test X86 AN/TPY-2 radar configuration with a THAAD Battery. - Conduct Flight Test Tracking Event-36, which will demonstrate interoperability and develop a coordinated firing solution between THAAD and PATRIOT. - Pre-mission Flight Test Operational-03 Event 2 (FTO-03 E2) (BMDS Operational Flight Test), which will further demonstrate, in an operational scenario, THAAD's ability to conduct coordinated engagements with Aegis and PATRIOT operating with (C2BMC) and forward-based AN/TPY-2while engaging an Intermediate Range Ballistic Missile. - Flight Test THAAD-15/18 (FTT-15/18) post-test reporting and data distribution.  FY 2019 Plans: - Conduct description efforts to support the following test events in accordance with the IMTP:									49.401	24.816	46.482	
									-	-	-	

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test	Project (Number/Name) MT07 / THAAD Test		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019
<p>- Conduct flight test incorporating THAAD Software Build 3.0, to include Debris Mitigation Phase 2, which will further demonstrate, in an operational scenario, THAAD's ability to conduct coordinated engagements with Aegis and PATRIOT operating with (C2BMC) and forward-based AN/TPY-2 while engaging an Intermediate Range Ballistic Missile.</p> <p><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> The increase from FY2018 to FY2019 reflects conducting a full operational flight test in FY2019, vice two non-intercept tracking exercises in FY 2018.</p>				
<p><b>Title:</b> Ground Test Execution</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Ground Test Execution includes:</p> <ul style="list-style-type: none"><li>- THAAD participation in MDA Ground Test operational scenario events to ensure THAAD’s ability to conduct coordinated engagements with Aegis and PATRIOT operating with C2BMC and AN/TPY-2,</li><li>- Pre-mission planning, pre- and post-mission analyses, reporting, and execution to support BMDS Ground and Flight Test campaigns, and</li><li>- Continued performance assessments to evaluate system performance and interoperability within the integrated BMDS. Specific and/or unique accomplishments to each FY are as follows:</li></ul> <p><b>FY 2018 Plans:</b></p> <ul style="list-style-type: none"><li>- Continue THAAD participation in MDA Ground Test operational scenario events GT-07 and GTI-ISR campaigns as described above.</li><li>- Initiate THAAD participation in MDA Ground Test operational scenario event GTD-08 campaign as described above.</li><li>- Initiate THAAD participation in ground test system pre-mission analyses for FTO-03 E2.</li></ul> <p><b>FY 2019 Plans:</b></p> <ul style="list-style-type: none"><li>- Continue THAAD participation in MDA Ground Test operational scenario events GT-07, GT-08 and GTI-ISR campaigns as described above.</li><li>- Complete THAAD participation in ground test system pre-mission analyses for FTO-03 E2.</li><li>- Initiation of Continuous Integration of element hardware and software to conduct replication activities prior to hardware-in-the-loop (HWIL) testing.</li></ul> <p><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> The increase from FY2018 to FY2019 reflects initiating Continuous Integration of element hardware and software prior to hardware-in-the-loop (HWIL) testing.</p>		1.410 -	5.076 -	7.669 -
<p><b>Title:</b> Resources</p>		3.895	2.974	3.279

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test	Project (Number/Name) MT07 / THAAD Test		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019
<div>Articles:</div> <p><b>Description:</b> Resources include efforts to:</p> <ul style="list-style-type: none"><li>- Provide on-site range support for THAAD maintenance, repair, and pre-mission analysis to ensure THAAD test asset readiness,</li><li>- Provide data management, facilities operations, and post-test reporting in support of BMDS tests to ensure data collection and readiness for mission execution, and</li><li>- Continue Performance Assessments to evaluate system performance and interoperability within the integrated BMDS</li></ul> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p><b>FY 2018 Plans:</b> - SEE ABOVE.</p> <p><b>FY 2019 Plans:</b> - SEE ABOVE.</p> <p><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> N/A</p>		-	-	-
<div>Articles:</div> <p><b>Title:</b> War-games and Exercises</p> <p><b>Description:</b> War-games and Exercises support the Combatant Commands (CCMDs) with model and simulations and subject matter expertise during exercise events. Continue to assist in developing/refining Tactics, Techniques, and Procedures and Pre-Planned Responses to incorporate in future events. Demonstrate THAAD capability to the warfighter community in the Integrated and Missile Defense (IAMD) environment.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p><b>FY 2018 Plans:</b> - SEE ABOVE.</p> <p><b>FY 2019 Plans:</b> - SEE ABOVE.</p> <p><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> N/A</p>		0.037 -	0.455 -	0.462 -
Accomplishments/Planned Programs Subtotals		54.743	33.321	57.892

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Missile Defense Agency										<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 0400 / 4				<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>				<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</i>				
<b>C. Other Program Funding Summary (\$ in Millions)</b>												
			<u>FY 2019</u>	<u>FY 2019</u>	<u>FY 2019</u>						<u>Cost To</u>	
<b>Line Item</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>Base</b>	<b>OCO</b>	<b>Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Complete</b>	<b>Total Cost</b>	
• 0208866C: MD07: <i>THAAD O&amp;M</i>	72.099	78.761	92.608	-	92.608	98.370	91.579	92.643	94.366	Continuing	Continuing	
• 0208866C: MD07: <i>THAAD Procurement</i>	566.504	960.732	469.068	-	469.068	416.343	413.956	424.473	434.439	232.135	3,917.650	
• 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	197.171	292.262	214.173	-	214.173	199.399	197.451	174.161	152.174	Continuing	Continuing	
<b>Remarks</b>												
<b>D. Acquisition Strategy</b>												
THAAD awards Indefinite Delivery Indefinite Quantity (IDIQ) Task Orders on the Advanced Capability Development (ACD) contract for the continuation of THAAD II development and test as described and approved in the MDA Integrated Master Test Plan. The discrete task orders allow management and tracking of IMTP-related work.												
<b>E. Performance Metrics</b>												
N/A												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency												Date: February 2018			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test				Project (Number/Name) MT07 / THAAD Test					
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Flight Test Execution - Execution, Support and Planning	MIPR	MDA / AMRDEC / KLC / Wake Island / RTS : AL / CO / AK / HI / Wake Island / Kwaj	64.297	34.620	Oct 2016	15.099	Nov 2017	26.699	Nov 2018	-		26.699	Continuing	Continuing	Continuing
Flight Test Execution - Planning, Analysis, and Execution	SS/IDIQ	Lockheed Martin : Sunnyvale, CA / Huntsville, AL	33.580	14.781	Oct 2016	9.717	Nov 2017	19.783	Nov 2018	-		19.783	Continuing	Continuing	Continuing
Ground Test Execution - BMDs Ground Test Support	MIPR	US Army AMRDEC : Huntsville, AL	10.870	1.410	Oct 2016	5.076	Dec 2017	7.669	Dec 2018	-		7.669	Continuing	Continuing	Continuing
Resources - All Prior Years	Various	Various : Various	5.961	0.000		0.000		0.000		-		0.000	0.000	5.961	0.000
Resources - Test and Range Infrastructure	MIPR	US Army AMRDEC / White Sands Missile Range / Lincoln Labs : Huntsville, AL / White Sands, NM / MA	7.961	3.895	Oct 2016	2.974	Dec 2017	3.279	Dec 2018	-		3.279	Continuing	Continuing	Continuing
War-games and Exercises - Wargames and Exercises	MIPR	MDA / Space and Missile Defense Command : Huntsville, AL	0.718	0.037	Oct 2016	0.455	Nov 2017	0.462	Nov 2018	-		0.462	Continuing	Continuing	Continuing
Subtotal			123.387	54.743		33.321		57.892		-		57.892	Continuing	Continuing	N/A
Remarks															
- Increases in R-3 Cost Category Items related to Flight Test Execution from FY 2018 to FY 2019 are due to non-intercept tracking events being executed in FY 2018, compared to a full operational intercept test planned in FY 2019. In FY 2019 THAAD plans to execute Flight Test Operational-03 Event 2 (FTO-03 E2) and initiate test planning activities for Flight Test THAAD-21 (FTT-21).															
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			123.387	54.743		33.321		57.892		-		57.892	Continuing	Continuing	N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2019 Missile Defense Agency							<b>Date:</b> February 2018			
<b>Appropriation/Budget Activity</b> 0400 / 4			<b>R-1 Program Element (Number/Name)</b> PE 0604876C / <i>Ballistic Missile Defense Terminal Defense Segment Test</i>			<b>Project (Number/Name)</b> MT07 / <i>THAAD Test</i>				
	<b>Prior Years</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	
<b>Remarks</b> N/A										



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PE 0604876C: Ballistic Missile Defense Terminal Defen...  
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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Missile Defense Agency			Date: February 2018
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test	Project (Number/Name) MT07 / THAAD Test	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
IMTP v19.1 flight and ground test event details are at a higher classification.	1	2017	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency										Date: February 2018		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MD40: Program Wide Support	4.636	2.824	2.918	3.125	-	3.125	0.733	2.215	2.374	2.372	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note												
Program Wide Support (PWS) reflects proportional changes as a result of budget changes in Ballistic Missile Defense Terminal Defense Segment Test program element. Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests on the R-3.												
A. Mission Description and Budget Item Justification												
PWS contains non-headquarters management costs in support of MDA functions and activities across the entire BMDS. It Includes Government Civilians and Contract Support Services. This provides integrity and oversight of the BMDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes Global Deployment personnel and support performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations. Other MDA wide costs includes: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations; data and unified communications support; supplies and maintenance; materiel and readiness and central property management of equipment; and similar operating expenses. PWS is allocated on a pro-rata basis and therefore, fluctuates by year based on the adjusted RDT&E profile (which excludes: 0305103C Cyber Security Initiative, 0603274C Special Programs, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2017	FY 2018	FY 2019	
Title: Program Wide Support  Articles:  Description: N/A  FY 2018 Plans: N/A  FY 2019 Plans: N/A  FY 2018 to FY 2019 Increase/Decrease Statement: N/A									2.824	2.918	3.125	
									-	-	-	
Accomplishments/Planned Programs Subtotals									2.824	2.918	3.125	

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test	Project (Number/Name) MD40 / Program Wide Support
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Missile Defense Agency												Date: February 2018			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test				Project (Number/Name) MD40 / Program Wide Support					
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Operations Management	Allot	Various : Multi: AL, VA, Aust, Japan	0.000	0.024	Jul 2017	0.058	Jul 2018	0.047	Jul 2019	-		0.047	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Civilian Salaries, Travel, Training	Allot	Various : VA	4.174	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support International and Materiel and Readiness	MIPR	Various : Multi: AL, VA, Aust, Japan	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, VA	0.462	2.800	Aug 2017	2.860	Aug 2018	3.078	Apr 2019	-		3.078	Continuing	Continuing	Continuing
Subtotal			4.636	2.824		2.918		3.125		-		3.125	Continuing	Continuing	N/A
Remarks N/A															
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			4.636	2.824		2.918		3.125		-		3.125	Continuing	Continuing	N/A
Remarks N/A															

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PE 0604876C: Ballistic Missile Defense Terminal Defen...  
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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Missile Defense Agency			Date: February 2018
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604876C / Ballistic Missile Defense Terminal Defense Segment Test	Project (Number/Name) MD40 / Program Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2017	4	2023